

The morphologist asks the question, "*What is this?*" and analyses, anatomizes, the dead; the physiologist asks the question, "*How is this?*" and analyses the living. The parallelism of these two inquiries, from Buffon to Darwin, has been luminously expounded by Prof. Patrick Geddes, and we follow his exposition.

#### A. MORPHOLOGICAL ANALYSIS.

(1) THE ORGANISM.—The morphologist naturally begins by describing the external characters of the intact creature—its symmetry, shape, architectural plan, and the like; and with the beginning of this we must associate the work of Ray and Linnæus. The work is still in progress, for "each new species described means a leaf added to the *Systema Naturæ*".

(2) THE ORGANS.—The description of superficial characters is, however, only the beginning of morphology; an analysis of organs is the next step. This may be especially associated with the name of Cuvier as zoologist, and Jussieu as botanist. This task is also an unending one, "to which every new descriptive anatomical research belongs as clearly as if it were published as an appendix to the *Règne Animal* itself".

(3) THE TISSUES.—The next logical step was taken in 1801 by Bichat, who in his *Anatomie Générale* analysed the body into its component tissues. This was the beginning of histology, which has now so many devotees.

(4) THE CELLS.—Minute analysis could not remain long at the level of tissues; these were soon analysed into their component or originative cells, the nucleated corpuscles of living matter which form the basis of all organic structure. This step must be particularly associated with Schwann and Schleiden, who formulated the "Cell Theory" in 1838-39. With the study of cells hundreds of modern workers are more or less exclusively occupied.

(5) PROTOPLASM.—The fifth and last step in morphological analysis, within the limits of biology, is that which passes from the cell as such to a study of the living matter and other substances which compose it. With this, though it is difficult to select names, the work of Dujardin, Von Mohl, and Max Schultze may be associated.

#### B. PHYSIOLOGICAL ANALYSIS.

(1) HABITS OF THE ORGANISM.—The early physiology was largely concerned with the ways and habits of the intact creature, sometimes rising to invaluable studies in "Natural History" or